Permit Fact Sheet

General Information

Permit Number:	WI-0063797-03-0	
Permittee Name:	Joint Water Quality Commission	
Address:	P.O. Box 127	
City/State/Zip:	Danbury WI 54830	
Discharge Location:	SE ¼ of Section 22, T41N-R16W, Lake 26 Road, Danbury, WI	
Receiving Water:	The groundwater of the Lower Yellow River watershed within the St. Croix River basin, Burnett County	
Design Flow(s)	Daily Maximum	0.18 MGD
	Annual Average	0.0865 MGD
Significant Industrial Loading?	No	
Operator at Proper Grade?	Yes	
Approved Pretreatment Program?	N/A	

Facility Description

The Joint Water Quality Commission (JWQC) of the community of Danbury & the St. Croix Chippewa Indians of WI jointly own and operate the wastewater treatment facility in Danbury which treats waste generated from homes and businesses in the community. The system, designed to treat an annual average of 86,500 gallons per day, currently treats an average of 37,000 gallons per day. Pre-treatment consists of a fine screen to remove grit (large particles). The wastewater then flows to the sequencing batch reactors (SBR). In the batch reactors cycles of filling, aerating, settling and decanting occur. Within the SBRs natural micro-organisms in the wastewater effectively treat the wastewater when exposed to aeration. After a specified period aeration is stopped and the solids are allowed to settle to the bottom creating a layer of sludge. The treated wastewater (effluent) is decanted and discharged to three seepage cells, where it is further filtered by the sandy soil in the bottom of the cells before percolating through the soil eventually reaching groundwater. There are four groundwater monitoring wells surrounding the facility that are sampled quarterly to identify any localized impacts that discharges may have on groundwater quality.

When sludge accumulates to a specified level in the SBR, it is drained and further treated in an aerobic digester. A small amount of the sludge is retained in the batch reactor to maintain effective micro-organism levels for the next batch of wastewater. Treated sludge is stored and moisture removed in four reed bed cells. The reed beds are planted walled pads constructed of concrete. The beds are planted with a non-native species of Phragmites (*Phragmites australis australis*) that can be invasive in natural wetland habitat if seeds or root rhizomes leave the treatment bed perimeter. This permit requires management practices to minimize the risk of spread off-site and annual plant surveys.

Substantial Compliance Determination

Enforcement During Last Permit: A notice of noncompliance (NON) issued 12/1/2020 for various non-compliant issues, including failure to submit monitoring well survey info per permit compliance schedule, improper operation of system (reed beds reached capacity), and total nitrogen effluent limit violations. The facility has completed all previously required actions as part of the enforcement process. Consideration of an operational needs review was discussed during the previous (2019) inspection; however recent maintenance activities appear to have addressed the chronic effluent violations. **The facility has completed all previously required actions as part of the enforcement process.**

The facility has met all of the previously required actions as part of the enforcement process. After a desk top review of all discharge monitoring reports, Compliance Maintenance Annual Report (CMAR), land application reports, compliance schedule items, and site visits on11/25/2019 and today (1/12/2022) the JWQC has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**
701	INFLUENT An average of 0.037 MGD (2017 - 2021 data)	Representative samples shall be collected at the influent box of the Sequencing Batch Reactor (SBR).
001	EFFLUENT An average of 0.022 MGD (2017 - 2021 data)	Representative samples shall be collected from the V-notch weir after the Sequencing Batch Reactor.
002	SLUDGE 350 US Dry Tons (Information provided in application)	A representative sample of sludge shall be taken from the reed bed(s) prior to land application. When biosolids are disposed in a landfill sampling is not required by the department.
003	SLUDGE Emergency use only.	If sludge (prior to the reed beds) needs to be removed the department shall be contacted prior to removal for proper sampling requirements and forms. Representative samples of liquid sludge from the aerobic digester shall be taken prior to land application or other methods of disposal.

Sample Point Designation For Groundwater Monitoring Systems		
Sample Pt Number	**Well Name**	**Comments**
801	MW-1	Down gradient point of standard application well located north west of the facility
802	MW 2	Down gradient point of standard application well located west of the facility.
803	MW-3	Up gradient background well used to calculate preventative action limits (PALs). Located south east of the facility.
804	MW-4	Down gradient well located south west of the facility.

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Total Kjeldahl		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Organic Total		mg/L	Monthly	Calculated	Organic Nitrogen = TKN (mg/L) - Ammonia Nitrogen (mg/L)

Changes from Previous Permit:

No changes were required in this permit section. Sampling requirements and frequencies are the same as the previous permit.

Explanation of Limits and Monitoring Requirements

Influent monitoring is needed to assess loading to the facility and treatment performance. The required parameters and sampling frequency are appropriate for a land treatment system (ch NR 206, Wis. Adm. Code).

2 Land Treatment – Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT TO SEEPAGE CELLS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total	Monthly Avg	50 mg/L	Monthly	24-Hr Flow Prop Comp	
Chloride	Daily Max	250 mg/L	Monthly	24-Hr Flow Prop Comp	
Suspended Solids,		mg/L	Monthly	24-Hr Flow	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Total				Prop Comp	
pH Field		su	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Total Kjeldahl		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Organic Total		mg/L	Monthly	Calculated	Organic Nitrogen = TKN (mg/L) - Ammonia Nitrogen (mg/L)
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Total	Monthly Avg	10 mg/L	Monthly	Calculated	Total Nitrogen = TKN (mg/L) + Nitrate+ Nitrogen (mg/L)
Solids, Total Dissolved	Daily Max	500 mg/L	Monthly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

No changes were required in this permit section. Sampling requirements and frequencies are the same as the previous permit.

Explanation of Limits and Monitoring Requirements

All requirements for land treatment of municipal wastewater are determined in accordance with NR 206 Wis. Adm. Code. All categorical limits are based on NR 206.08(1) Adm. Code. More information can be found in the "Joint Water Quality Commission – Land Disposal System Evaluation Report – WPDES Permit # WI-0063797" memo dated November 29, 2021.

BOD_5, Chloride, Total Nitrogen and **Total Dissolved Solids** – Limitations are consistent with facilities approved or modified post January 1, 1990 (NR 206.05 Wis. Adm. Code).

Sampling Frequency - The "Monitoring Frequencies for Individual Wastewater Permits" guidance document (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

Permitted monitoring frequencies fall below the standard monitoring frequencies outlined in the guidance document. Section NR 205.066(1) Wis. Adm. Code allows sampling frequency to be set on a case-by-case basis. The permittee demonstrates a history of consistent compliance with existing permit limits. Data submitted during the previous permit term continues to show consistent compliance with permit limitations, and the set monitoring frequencies are consistent with requirements of state code. The current monitoring frequencies shall continue this permit term. If performance levels

begin to vary during the permitted term, the department may re-evaluate current sampling frequencies and implement more frequent monitoring via permit modification or at permit reissuance.

3 Groundwater – Proposed Monitoring and Limitations

3.1 Groundwater Monitoring System for Seepage Cells

Location of Monitoring system: around the treatment system

Wells to be Monitored: 801 (MW-1), 802 (MW-2), 803 (MW-3), 804 (MW-4)

Well Used To Calculate PALs: 803 (MW-3)

Point of Standards Application Well(s): 802 (MW 2)

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	*****	N/A	Quarterly
Groundwater Elevation	feet MSL	*****	N/A	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	Quarterly
Chloride Dissolved	mg/L	125	250	Quarterly
pH Field	su	8.6	N/A	Quarterly
Nitrogen, Total Kjeldahl Dissolved	mg/L	*****	N/A	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly
Nitrogen, Organic Dissolved	mg/L	2.3	N/A	Quarterly
Solids, Total Dissolved	mg/L	250	N/A	Quarterly

Changes from Previous Permit:

The Preventative Action Limit (PAL) were updated for pH and total dissolved solids.

Explanation of Limits and Monitoring Requirements

Groundwater limits and requirements are determined in accordance with ch NR 140 Wis. Adm. Code. Indicator parameter PAL values are established per ch NR 140.20 Wis. Adm. Code. For more information please refer to the "Joint Water Quality Commission – Land Disposal System Evaluation Report – WPDES Permit # WI-0063797" memo dated November 29, 2021.

The PALs and Enforcement Standard (ES) limits will remain the same except for the PALs for two parameters, pH and Total Dissolved Solids per ch NR 140.20 Wis. Adm. Code.

Parameter	Current Permit		Proposed Permit	
	Preventive Action Limit	Enforcement Standard	Preventive Action Limit	Enforcement Standard
pH Field	6.6-8.6 su	N/A	6.7-8.7 su	N/A
Solids, Total Dissolved	245 mg/L	N/A	250 mg/L	N/A

4 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Cake	Landfill	Landfill	Landfill	350 Dry Tons/Year
003	B	Liquid	Not expected to be used – Emergency use only.			
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No, during the most recent round of sampling (2020), the sample was below the level of detection. If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in land applying sludge from this facility						
Is a priority pollutant scan required? No Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- REED BED CAKE

Changes from Previous Permit:

The facility is planning to remove sludge cake from one or more reed beds during the permit term. Sludge removal and disposal will follow the department approved sludge management plan dated May 2021; sludge sampling and characterization requirements will be performed as required by the receiving disposal facility/landfill.

Explanation of Limits and Monitoring Requirements

This facility utilizes a reed bed system for biosolids treatment and storage. The beds were planted with the non-native, invasive reed grass *Phragmites australis australis.* Although very effective for biosolids treatment, this non-native variety of Phragmites can be highly invasive in natural wetland habitats if the seeds or rhizomes escape to the environment. Recent documentation indicates that this plant can spread effectively by seed dispersal, whereas prior research indicated that the spread was mostly through rhizomes. Fortunately, past annual surveys have not detected any spread of these plants outside the reed beds on the JWQC's wastewater treatment system grounds. Wisconsin Administrative Code NR 40 (NR 40) specifically allows this use of non-native species for biosolids treatment.

There are approximately 20 facilities in Wisconsin that use the reed bed treatment option. In the eastern portion of the state, the invasive form of Phragmites is fairly widespread in roadside ditches and wetlands. In the northern and western parts of the state, this non-native variety is less common. As a result, the threat to natural wetland plant communities is of more concern in these areas. Because of this, the JWQC treatment system is considered to be located in a "high risk" area of the state for the introduction and spread of this non-native, invasive variety per NR 40.

The permit contains further recommended management practices to prevent and monitor for off-site spread of this invasive species, including:

- Reed Harvesting – In order to prevent escape of non-native Phragmites from reed beds by seed, flowering bodies in reed beds are recommended to be cut before the seed heads form if at all practicable. Cutting should be done as often as needed during the growing season to remove flower heads so they are not allowed to mature and form seed.

Clipped heads should be left in the reed beds. Equipment used to harvest seed heads should be checked to be sure no seeds are entrained or attached to the equipment after use. Because of the high risk of seeds spreading and causing further infestations, harvesting of reeds should be limited to methods of disposal or destruction that have been discussed with your Department Basin Engineer prior to use. Burning in place is no longer recommended unless the facility provides a protocol that can ensure seeds will not be dispersed by smoke, wind or other vectors. It may be possible to burn if all seed heads are removed (before maturing) at appropriate intervals during the growing season. Any proposal for an alternate method should be discussed with your Department Basin Engineer prior to use. Reeds can be left in the beds to decay in the biosolids, but this may cause less and later reed growth in the subsequent season.

- Sludge Removal –Sludge removal and disposal will follow the department approved sludge management plan dated May 2021. The approved plan includes protocols for interim on-site storage followed by final landfill disposal. Transporting invasive species plant material and biosolids containing invasive plants and plant parts is allowed by this permit under the conditions of Wisconsin Administrative Code NR 40.06(7).
- Local Surveys - Comprehensive surveys will be required annually for identifying potential infestations outside of the reed beds, including lands beyond the treatment facility grounds.
    - One-mile radius - Seeds from the non-native Phragmites variety have been documented to travel up to 0.9 miles. Therefore, surveys shall include observations from likely areas of infestation within one mile of this facility. The survey area should be expanded by an additional 1-mile radius from any infestations discovered outside of facility boundaries, up to an outside radius of 6 miles from the wastewater treatment plant site.
    - Corridor Concerns - Seeds and rhizomes can be carried along corridors, such as but not limited to, highways, recreational trails and water bodies. Sensitive areas along these corridors require additional survey efforts. Lawnmowers, construction and even snowplowing equipment can provide transportation of both seeds and rhizomes. Wind along these corridors can transport seeds. As a result, surveys shall include observations along such corridors within 1 mile of the facility or further as needed.
- Reporting Infestations - Any infestations identified during the surveys will require verbal notification of the Department's Wastewater Engineer within 24 hours. Written notification (including maps of locations) must be sent to the Wastewater Engineer within 72 hours of identification. The Department will work with the facility staff and other local agencies on an eradication plan.

Note: Additional requirements and best management practices are being developed for WPDES permits that contain reed bed systems as part of wastewater treatment. This permit may be modified or reissued prior to the end of the permit term to address these changes which will likely result in additional management limitations, Phragmites controls and/or compliance schedules that must be included in WPDES permits.

Sample Point Number: 003- LIQUID SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH_4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	

Changes from Previous Permit:

- This is a new outfall this permit term. It is limited to emergency removal of liquid sludge from the system prior to the reed beds.
- Monitoring is required only when liquid sludge is removed and land applied.

Explanation of Limits and Monitoring Requirements

The outfall/sample point shall be used only as necessary for the discharge of liquid sludge from the process prior to the reed beds. If a situation arises and the outfall is needed the permittee shall notify the assigned Department wastewater compliance staff so that the appropriate monitoring forms can be generated.

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements.

5 Compliance Schedules

5.1 Chloride Source Reduction Measures (SRMs) for Groundwater Discharges

Required Action	Due Date
Chloride Reduction Plan: The permittee shall complete and submit for Department review and approval a chloride reduction plan (CRP). The CRP is an initial step toward controlling chloride and ensuring compliance with chloride limits based on applicable groundwater standards. The CRP shall evaluate all applicable source reduction measures (SRMs) and establish appropriate implementation activities for the SRMs. The CRP shall include a schedule for implementing the selected SRMs.	03/31/2023

Annual Progress Report: Once the chloride reduction plan (CRP) is approved by the Department, the permittee shall submit an annual progress report, under the authority of s. NR 205.07(1)(h), Wis. Adm. Code. If a SRM implementation date of an approved CRP is not met, this may constitute a violation of the permit. Submittal of the first annual progress report is required by the Date Due.	03/31/2024
Second Annual Progress Report: Submit progress report in implementing the chloride reduction plan (CRP).	03/31/2025
Third Annual Progress Report: Submit progress report in implementing the chloride reduction plan (CRP).	03/31/2026
Final Annual Progress Report: Submit progress report in implementing the chloride reduction plan (CRP).	03/31/2027

5.2 Reed Bed Phragmites Survey

An annual survey of adjacent lands for phragmites is required.

Required Action	Due Date
Submit an Annual Phragmites Survey: The permittee shall conduct an annual survey of adjacent lands for new Phragmites growth. Surveys shall be done at a time of the year when Phragmites are biologically active. The annual surveys shall contain the name and qualifications of the person(s) completing the inspection, the date of the survey, and at a minimum include descriptions of the area(s) inspected, land use(s), dominant plant community, existing Phragmites stands, and any areas of potential concern or newly discovered Phragmites growth. Photographic documentation of the survey area(s) is also recommended. The survey area should be as large as practicable and include any area potentially susceptible to phragmites growth. The Department shall be notified within 24 hours whenever new growths of Phragmites are discovered. The Department may require the permittee to eradicate specific stands of Phragmites in these areas.	12/31/2022
Annual Phragmites Survey: Submit a report on the annual Phragmites survey as defined above.	12/31/2023
Annual Phragmites Survey: Submit a report on the annual Phragmites survey as defined above.	12/31/2024
Annual Phragmites Survey: Submit a report on the annual Phragmites survey as defined above.	12/31/2025
Annual Phragmites Survey: Submit a report on the annual Phragmites survey as defined above.	12/31/2026
Annual Phragmites Surveys After Permit Expiration: In the event that this permit is not reissued by the date the permit expires, the permittee shall continue to submit reports on the annual Phragmites surveys following the due date of Annual Phragmites Survey Reports listed above. The reports on the Annual Phragmites Surveys shall include the information as defined above.	

Explanation of Compliance Schedules

Chloride Source Reduction Measures (SRMs) for Groundwater Discharges - Chloride levels in local groundwater are slowly increasing. The permittee will take measures to limit chlorides introduced to the land treatment system.

Reed Bed Phragmites Survey – Annual surveys are required to ensure confinement of phragmites to the reed beds.

Attachments:

Water Flow Schematic(s)

"Joint Water Quality Commission – Land Disposal System Evaluation Report – WPDES Permit # WI-0063797" memo dated November 29, 2021

Proposed Expiration Date:
March 31, 2027

Justification Of Any Waivers From Permit Application Requirements
N/A

Prepared By:

Sheri A. Snowbank Wastewater Specialist

Date: January 19, 2022

cc: Eric de Venecia, WDNR-Superior